Cover Letter

To Whom It May Concern,

ICL-IP America Inc. is submitting the PMN of our new product E08-16T (HF-8) for your review. We have conducted numerous studies including Physical/Chemical properties, Human Health, eco-toxocity, environmental fate, waste water treatment, etc. All the reports are attached with the Notifcation.

We have performed chronic daphnia and 28-day sub-acute toxicity studiy, respectively. The No Observed Effect Concentration (NOEC) in Daphnia magna after exposure of 21 day is 0.90 mg a.i./L. The 28-day NOAEL is 300 mg/kg/day (4 weeks oral rat). Both studies show low concern of the PMN substance in terms of toxicity.

The wastewater treatment study shows that the PMN substance is compatable with the existing bacteria in our plant and the treated effluent can be controlled below 0.2 mg/L (COD). It can be concluded that the plant's effluent is not a concern to the environment.

Please feel free to contact me at (914) 269-5928 should you have any questions.

Sincerely,

Andy Wang

Form Approved. O.M.B. Nos. 2070-0012 and 2070-0038

U.S. ENVIRONMENTAL PROTECTION AGENCY			AGENCY USE ONLY
EPA	**PREMANUFACTURE NOTICE** **FOR NEW CHEMICAL SUBSTANCES**		Date of receipt:
When completed, send this form to:	**If sending by Courier:** Office of Pollution Prevention and Toxics Document Control Office (7407M) US EPA, 1201 Constitution Ave NW WASHINGTON, D.C. 20460 Contact Numbers: 202-564-8930/8940	**If sending by US Mail:** Office of Pollution Prevention and Toxics Document Control Office (7407M) US EPA, 1200 Pennsylvania Ave NW WASHINGTON, D.C. 20460	**Submission Report Number** PMN_121015937853300

Total Number of Pages	User Fee Payment ID Number	TS Number
637	74305006034	ADAWHF

GENERAL INSTRUCTIONS

- You must provide all information requested in this form to the extent that it is known to or reasonably ascertainable by you. Make reasonable estimates if you do not have actual data.
- Before you complete this form, you should read the "Instructions Manual for Premanufacture Notification" (the Instructions Manual is available from the Toxic Substances Control Act (TSCA) Information Service by calling 202-554-1404, or faxing 202-554-5603).
- If a user fee has been remitted for this notice (40 CFR 700.45), indicate in the boxes above the TS-user fee identification number you have generated. Remember, your user fee ID number must also appear on your corresponding fee remittance. For mailing address information see the Help instructions in the e-PMN tool.

Part I – GENERAL INFORMATION

You must provide the currently correct Chemical Abstracts (CA) Name of the new chemical substance, even if you claim the identity as confidential. You may authorize another person to submit chemical identity information for you, but your submission will not be complete and the review will not begin until EPA receives this information. A letter in support of your submission should reference your TS user fee identification number. For all Section 5 Notice submissions (paper or electronic) you must submit an original notice including all test data; if you claimed any information as confidential, an original sanitized copy must also be submitted.

Part II – HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

If there are several manufacture, processing, or use operations to be described in Part II, sections A and B of this notice, reproduce the sections as needed.

Part III – LIST OF ATTACHMENTS

For paper submissions, attach additional sheets if there is not enough space to answer a question fully. Label each continuation sheet with the corresponding section heading. In Part III, list these attachments, any test data or other data and any optional information included in the notice.

OPTIONAL INFORMATION

You may include any information that you want EPA to consider in evaluating the new substance. On page 11 of this form, space has been provided for you to describe pollution prevention and recycling information you may have regarding the new substance. "Binding" boxes are included throughout this form for you to indicate your willingness to be bound to certain statements you make in this section, such as use, production volume, protective equipment . . . The intention is to reduce delays that routinely accompany the development of consent orders or Significant New Use Rules. Checking a "binding" box in a PMN does not by itself prohibit the submitter from later deviating from the information (except chemical identity) reported in the form; however, in the case of exemption applications (such as TMEA, LVE, LOREX) certain information provided in such notifications is binding on the submitter when the Agency approves the exemption application, especially if the production volume "binding" box is chosen in a LVE.

CONFIDENTIALITY CLAIMS

You may claim any information in this notice as confidential. To assert a claim on the form, mark (X) the confidential box next to the information that you claim as confidential. To assert a claim in an attachment, circle or bracket the information you claim as confidential. If you claim information in the notices as confidential, you must also provide a sanitized version of the notice, (including attachments). For additional instructions on claiming information as confidential, read the Instructions Manual.

TEST DATA AND OTHER DATA

You are required to submit all test data in your possession or control and to provide a description of all other data known to or reasonably ascertainable by you, if these data are related to the health and environmental effects on the manufacture, processing, distribution in commerce, use, or disposal of the new chemical substance. Standard literature citations may be submitted for data in the open scientific literature. Complete test data (written in English), not summaries of data, must be submitted if they do not appear in the open literature. You should clearly identify whether test data is on the substance or on an analog. Also, the chemical composition of the tested material should be characterized. Following are examples of test data and other data. Data should be submitted according to the requirements of §720.50 of the Premanufacture Notification Rule (40 CFR Part 720).

Test Data (Check Below any included in this notice)

[X]	Environmental fate data	[X]	Other Data
[X]	Health effects data	[ ]	Risk Assessments
[X]	Environmental effects data	[X]	Structure/activity relationships
[X]	Physical/Chemical Properties (A physical and chemical properties worksheet is located on the last page of this form.)		
[ ]	Test data not in the possession or control of the submitter		

TYPE OF NOTICE (Check Only One)

- [X] **PMN** (Premanufacture Notice)
- [ ] **SNUN** (Significant New Use Notice)
- [ ] **TMEA** (Test Marketing Exemption Application)
- [ ] **LVE** (Low Volume Exemption) @ 40 CFR 723.50(c)(1)
- [ ] **LOREX** (Low Release/Low Exposure Exemption) @ 40 CFR 723.50(c)(2)
- [ ] **LVE** Modification
- [ ] **LOREX** Modification
- [ ] **Mock Submission**
- [ ] Mark (X) if pending Letter of Support

IS THIS A CONSOLIDATED PMN (Y/N)? ____

____ # of chemicals or polymers (Prenotice Communication # required, enter # on p. 3).

[X] Mark (X) if any information in this notice is claimed as confidential.

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CERTIFICATION -- A printed copy of this signature page, with original signature, must be submitted with CD or paper submission.

I certify that to the best of my knowledge and belief:

1. The company named in Part I, section A, subsection 1a of this notice form intends to manufacture, import or process for a commercial purpose, other than in small quantities solely for research and development, the substance identified in Part I, Section B.
2. All information provided in this notice is complete and truthful as of the date of submission.
3. I am submitting with this notice all test data in my possession or control and a description of all other data known to or reasonably ascertainable by me as required by §720.50 of the Premanufacture Notification Rule.

Additional Certification Statements:

If you are submitting a PMN, Intermediate PMN, Consolidated PMN, or SNUN, check the following **user fee** certification statement that applies:

- [X] The Company named in Part I, Section A has remitted the fee of $2500 specified in 40 CFR 700.45(b), or
- [ ] The Company named in Part I, Section A has remitted the fee of $1000 for an Intermediate PMN (defined @ 40 CFR 700.43) in accordance with 40 CFR 700.45(b), or
- [ ] The Company named in Part I Section A is a small business concern under 40 CFR 700.43 and has remitted a fee of $100 in accordance with 40 CFR 700.45(b).

If you are submitting a **Low Volume Exemption (LVE)** application in accordance with 40 CFR 723.50(c)(1) or a **Low Release and Low Exposure Exemption (LoRex)** application in accordance with 40 CFR 723.50(c)(2), check the following certification statements:

- [ ] The manufacturer submitting this notice intends to manufacture or import the new chemical substance for commercial purposes, other than in small quantities solely for research and development, under the terms of 40 CFR 723.50.
- [ ] The manufacturer is familiar with the terms of this section and will comply with those terms; and
- [ ] The new chemical substance for which the notice is submitted meets all applicable exemption conditions.
- [ ] If this application is for an LVE in accordance with 40 CFR 723.50(c)(1), the manufacturer intends to commence manufacture of the exempted substance for commercial purposes within 1 year of the date of the expiration of the 30 day review period.

The accuracy of the statements you make in this notice should reflect your best prediction of the anticipated facts regarding the chemical substance described herein. Any knowing and willful misrepresentation is subject to criminal penalty pursuant to 18 USC 1001.

Confidential

Signature and title of Authorized Official (Original Signature Required)		Date		
				☐

Part I -- GENERAL INFORMATION

Section A – SUBMITTER IDENTIFICATION

Mark (X) the "Confidential" box next to any subsection you claim as confidential

1a.	Person Submitting Notice (in U.S.)					Confidential
Name of Authorized Official	(first) ANDY		(last) WANG			
Position	REGULATORY MANAGER					
Company	ICL-IP AMERICA, INC.					☐
Mailing Address (number & street)	430 SAW MILL RIVER ROAD					
City	ARDSLEY	State	NY	Postal Code	10502	
email	andy.wang@icl-ipa.com					

b.	Agent (if Applicable)					Confidential
Name of Authorized Official	(first)		(last)			
Position						
Company						☐
Mailing Address (number & street)						
City		State		Postal Code		
e-mail		Telephone (include area code)				

c.	Joint Submitter (if applicable)					Confidential
If you are submitting this notice as part of a joint submission, mark (X)					☐	
Name of Authorized Official	(first)		(last)			
Position						
Company						☐
Mailing Address (number & street)						
City		State		Postal Code		
e-mail		Telephone (include area code)				

2.	Technical Contact (in U.S.)					Confidential
Name of Authorized Official	(first) ANDY		(last) WANG			
Position	REGULATORY MANAGER					
Company	ICL-IP AMERICA INC.					☐
Mailing Address (number & street)	430 SAW MILL RIVER ROAD					
City	ARDSLEY	State	NY	Postal Code	10502	
e-mail	andy.wang@icl-ipa.com	Telephone (include area code)			914-269-5928	

			Mark (X) if none	Confidential
3.	If you have had a prenotice communication (PC) concerning this notice and EPA assigned a PC Number to the notice, enter the number.		☒	☐
4.	If you previously submitted an exemption application for the chemical substance covered by this notice, enter the exemption number assigned by EPA. If you previously submitted a PMN for this substance enter the PMN number assigned by EPA (i.e. withdrawn or incomplete).		☒	☐
5.	If you have submitted a notice of Bona fide intent to manufacture or import for the chemical substance covered by this notice, enter the notice number assigned by EPA.	XXX	☐	☒

6.	Type of Notice – Mark (X)						
1.	Manufacture Only ☐ Binding Option ☐	2.	Import Only ☐ Binding Option ☐	3.	Both ☒		

Part I – GENERAL INFORMATION -- Continued

Section B – CHEMICAL IDENTITY INFORMATION: You must provide a currently correct Chemical Abstracts (CA) name of the substance based on current CA index nomenclature rules and conventions.

Mark (X) the "Confidential" box next to any item you claim as confidential

Complete either item 1 (Class 1 or 2 substances) or 2 (Polymers) as appropriate. Complete all other items.

If another person will submit chemical identity information for you (for either Item 1 or 2), mark (X) the box at the right. Identify the name, company, and address of that person in a continuation sheet. ☐

1. Class 1 or 2 chemical substances (for definitions of class 1 and class 2 substances, see the Instructions Manual)	Class 1	Class 2	CBI
a. Class of substance - Mark (X)	X	☐	☐

b. Chemical name (Currently correct Chemical Abstracts (CA) Name that is consistent with TSCA Inventory listings for similar substances. For Class 1 substances a CA Index Name must be provided. For Class 2 substances either a CA Index Name or CA Preferred Name must be provided, which ever is appropriate based on current CA index nomenclature rules and conventions). X

XXX

CAS Registry Number (if a number already exists for the substance): XXX

c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice: (check one).

Method 1 (CAS Inventory Expert Service - a copy of the Identification report obtained from the CAS Inventory Expert Services must be submitted as an attachment to this notice) ☐ | IES Order Number | **Method 2** (Other Source) X

Enter Attachment filename for Part I, Section B, 1. c.: STN_CASRN_E08_16T_Sanitized.pdf ☐

d. Molecular formula: XXX X

e. For a class 1 substance, provide a complete and correct chemical structure diagram. For a class 2 substance, provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained. ☐

See Attachment 002 (E08_16T_chemical_structure_Sanitized.pdf)

Enter Attachment filename for Part I, Section B, 1. e.: E08_16T_chemical_structure_Sanitized.pdf ☐

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For a class 2 substance - (1) List the immediate precursor substances with their respective CAS Registry Numbers. (2) Describe the nature of the reaction or process. (3) Indicate the range of composition and the typical composition (where appropriate).	Confidential

e. (1) List the immediate precursor substance names with their respective CAS Registry Numbers. [X]

XXX

Enter Attachment filename for Part I, Section B, 1. e. (1)		☐

e. (2) Describe the nature of the reaction or process. [X]

XXX

Enter Attachment filename for Part I, Section B, 1. e. (2)		☐

e. (3) Indicate the range of composition and the typical composition (where appropriate). [X]

XXX

Enter Attachment filename for Part I, Section B, 1. e. (3)		☐

Part I -- GENERAL INFORMATION – Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

2. Polymers (For a definition of polymer, see the Instructions Manual.)	Confidential
a. Indicate the number-average weight of the lowest molecular weight composition of the polymer you intend to manufacture. Indicate maximum weight percent of low molecular weight species (not including residual monomers, reactants, or solvents) below 500 and below 1,000 absolute molecular weight of that composition.	☐

Describe the methods of measurement or the basis for your estimates:

GPC ☐	**Other** (Specify Below) ☐	

Specify Other:

(i) lowest number average molecular weight:	(ii) maximum weight % below 500 molecular weight:	(iii) maximum weight % below 1000 molecular weight:

Enter Attachment filename for Part I, Section B, 2. a. ☐

b. You must make separate confidentiality claims for monomer or other reactant identity, composition information, and residual information. Mark (X) the "Confidential" box next to any item you claim as confidential

(1) - Provide the specific chemical name and CAS Registry Number (if a number exists) of each monomer or other reactant used in the manufacture of the polymer.
(2) - Mark (X) this column if entry in column (1) is confidential.
(3) - Indicate the typical weight percent of each monomer or other reactant in the polymer.
(4) - Choose "yes" from drop down menu if you want a monomer or other reactant used at two weight percent or less to be listed as part of the polymer description on the TSCA Chemical Substance Inventory.
(5) - Mark (X) this column if entries in columns (3) and (4) are confidential.
(6) - Indicate the maximum weight percent of each monomer or other reactant that may be present as a residual in the polymer as manufactured for commercial purposes.
(7) - Mark (X) this column if entry in column (6) is confidential.

Monomer or other reactant specific chemical name (**1**)	CBI (**2**)	Typical composition (**3**)	Include in identity (**4**)	CBI (**5**)	Max residual (**6**)	CBI (**7**)
CAS Registry Number (**1**)						
CAS Registry Number (**1**)						
CAS Registry Number (**1**)						
CAS Registry Number (**1**)						
CAS Registry Number (**1**)						

Mark (X) this box if the data continues on the next page. ☐

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c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice (check one).				CBI
Method 1 (CAS Inventory Expert Service - a copy of the identification report obtained from CAS Inventory Expert Service must be submitted as an attachment to this notice) ☐	IES Order Number		**Method 2** (other source) ☐	
Enter Attachment filename for Part I, Section B, 2. c.				☐

d. The currently correct Chemical Abstracts (CA) name for the polymer that is consistent with TSCA Inventory listings for similar polymers.	☐

CAS Registry Number (if a number already exists for the substance)		

e. Provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained.	☐

Enter Attachment filename for Part I, Section B, 2. e.		☐

Part I -- GENERAL INFORMATION -- Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

3. Impurities
   (a) - Identify each impurity that may be reasonably anticipated to be present in the chemical substance as manufactured for commercial purpose. Provide the CAS Registry Number if available. If there are unidentified impurities, enter "unidentified."
   (b) - Estimate the maximum weight % of each impurity. If there are unidentified impurities, estimate their total weight %.

Impurity (a)	CAS Registry Number (a)	Maximum Percent % (b)	Confi-dential
XXX	XXX	XXX	X
XXX	XXX	XXX	X
XXX	XXX	XXX	X

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part I, Section B, 3. ☐

4. Synonyms - Enter any chemical synonyms for the new chemical identified in subsection 1 or 2. ☐

Enter Attachment filename for Part I, Section B, 4. ☐

5. Trade identification - List trade names for the new chemical substance identified in subsection 1 or 2.
E08-16T, FYROL HF-8, E08-16T-PB ☐

Enter Attachment filename for Part I, Section B, 5. ☐

6. Generic chemical name - If you claim chemical identify as confidential, you must provide a generic name for your substance that reveals the specific chemical identity of the new chemical substance to the maximum extent possible. Refer to the TSCA Chemical Substance Inventory, 1985 Edition, Appendix B for guidance on developing generic names.

Phosphate ester

Enter Attachment filename for Part I, Section B, 6.

7. Byproducts - Describe any byproducts resulting from the manufacture, processing, use, or disposal of the new chemical substance. Provide the CAS Registry Number if available.

Byproduct (1)	CAS Registry Number (2)	Confi-dential
Hydrochloric Acid	7647-01-0	

Mark (X) this box if the data continues on the next page. ☐

Part I -- GENERAL INFORMATION -- Continued

Section C -- PRODUCTION, IMPORT, AND USE INFORMATION:

The information on this page refers to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Mark (X) the "Confidential" box next to any item you claim as confidential.

1. Production volume -- Estimate the **maximum** production volume during the first 12 months of production. Also estimate the maximum production volume for any consecutive 12-month period during the first three years of production. Estimates should be on 100% new chemical substance basis. For a Low Volume Exemption application, if you choose to have your notice reviewed at a lower production volume than 10,000 kg/yr, specify the volume and mark (x) in the binding box. If granted, you are bound to this volume.

Maximum first 12-month production (kg/yr) (100% new chemical substance basis)	Maximum 12-month production (kg/yr) (100% new chemical substance basis)	Confidential	Binding Option Mark (X)
XXX	XXX	☒	☐

Enter Attachment filename for Part I, Section C, 1. | CBI ☐

2. Use Information -- You must make separate confidentiality claims for the description of the category of use, the percent of production volume devoted to each category, the formulation of the new substance, and other use information. Mark (X) the "Confidential" Box next to any item you claim as confidential.

a. (1) --Describe each intended category of use of the new chemical substance by function and application.
(2) --Mark (X) this column if entry column (1) is confidential business information (CBI).
(3) --Indicate your willingness to have the information provided in column (1) binding.
(4) --Estimate the percent of total production for the first three years devoted to each category of use.
(5) --Mark (X) this column if entry in column (4) is confidential business information (CBI).
(6) --Estimate the percent of the new substance as formulated in mixtures, suspensions, emulsions, solutions, or gels as manufactured for commercial purposes at sites under your control associated with each category of use.
(7) --Mark (X) this column if entry in column (6) is confidential business information (CBI).
(8) --Indicate % of product volume expected for the listed "use" sectors. Mark more than one box if appropriate. Mark (X) to indicate your willingness to have the use type provided in (8) binding.
(9) --Mark (X) this column if entry(ies) in column (8) is (are) confidential business information (CBI).

Category of use (**1**) (by function and application i.e. a dispersive dye for finishing polyester fibers)	CBI (**2**)	Binding Option Mark (X) (**3**)	Production % (**4**)	CBI (**5**)	% in Formulation (**6**)	CBI (**7**)	% of substance expected per use (**8**)					CBI (**9**)
							Site-limited	Consumer*	Industrial	Commercial	Binding Option	
XXX	X		XXX	X	XXX	X	XXX	XXX	XXX	XXX		X

* If you have identified a "consumer" use, please provide on a continuation sheet a detailed description of the use(s) of this chemical substance in consumer products. In addition include estimates of the concentration of the new chemical substance as expected in consumer products and describe the chemical reactions by which this substance loses its identity in the consumer product.

Mark (X) this box if the data continues on the next page. ☐

b. Generic use description — If you claim any category of use description in subsection 2a as confidential, enter a generic description of that category. Read the Instruction Manual for examples of generic use descriptions.

The PMN substance is mainly used as flame retardant for flexible Polyurethane foam applications. The PMN substance is phosphate ester based halogen -free flame retardant.

Enter Attachment filename for Part I, Section C, 2. b. | CBI ☐

3. Hazard Information -- Include in the notice a copy of reasonable facsimile of any hazard warning statement, label, material safety data sheet, or other information which will be provided to any person who is reasonably likely to be exposed to this substance regarding protective equipment or practices for the safe handing, transport, use, or disposal of the new substance. List in part III hazard information you include.

		Binding Option Mark (X)
Mark (X) this box if you attach hazard information.	☒	☐

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER

Mark (X) the "Confidential" box next to any item you claim as confidential

The information on pages 8 and 8a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Complete section A for each type of manufacture, processing, or use operation involving the new chemical substance at industrial sites you control. Importers do not have to complete this section for operations outside the U.S.; however, you may still have reporting requirements if there are further industrial processing or use operations after import. You must describe these operations. See instructions manual

1. Operation description
   a. Identity -- Enter the identity of the site at which the operation will occur.

				Confi-dential
Name	ICL-IP America Inc			
Site address (number and street)	11636 Huntington Road			☐
City	Gallipolis Ferry	County		
State	WV	ZIP code	25515	

If the same operation will occur at more than one site, enter the number of sites. Identify the additional sites on a continuation sheet, and if any of the sites have significantly different production rates or operations, include all the information requested in this section for those sites as attachments. →	1	☐
Mark (X) this box if the data continues on the next page. ☐		

b. Type -- Mark (X) Manufacturing ☒ Processing ☐ Use ☐ — Confi-dential ☐

c. Amount and Duration -- Complete 1 or 2 as appropriate

				Confi-dential
1. Batch	Maximum kg/batch (100% new chemical substance)	Hours/batch	Batches/year	☐
2. Continuous	Maximum kg/day (100% new chemical substance)	Hours/day	Days/year	☒
	XXX	XXX	XXX	

d. Process description — Mark (X) to indicate your willingness to have your process description binding. → ☐

(1) Diagram the major unit operation steps and chemical conversions. Include interim storage and transport containers (specify- e.g. 5 gallon pails, 55 gallon drum, rail car, tank truck, etc.).
(2) Provide the identity, the approximate weight (by kg/day or kg/batch on a 100% new chemical substance basis), and entry point of all starting materials and feedstocks (including reactants, solvents, catalysts, etc.), and of all products, recycle streams, and wastes. Include cleaning chemicals (note frequency if not used daily or per batch.).
(3) Identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance. If releasing to two media at the same step, assign a second release number for the second medium.

☐

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Diagram of the major unit operation steps.	Confidential ☐

See Attachment 003 (E08_16T_Production_process_Sanitized.pdf)

Enter Attachment filename for Part II, Section A, 1. d.	E08_16T_Production_process_Sanitized.pdf ☐

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE -- Continued

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER -- Continued

The information on pages 9 and 9a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

2. Occupational Exposure -- You must make separate confidentiality claims for the description of worker activity, physical form of the new chemical substance, number of workers exposed, and duration of activity. Mark (X) the "Confidential" box next to any item you claim as confidential.

(1) -- Describe the activities (i.e. bag dumping, tote filling, unloading drums, sampling, cleaning, etc.) in which workers may be exposed to the substance.
(2) -- Mark (X) this column if entry in column (1) is confidential business information (CBI).
(3) -- Describe any protective equipment and engineering controls used to protect workers.
(4) and (6) -- Indicate your willingness to have the information provided in column (3) or (5) binding.
(5) -- Indicate the physical form(s) of the new chemical substance (e.g., solid: crystal, granule, powder, or dust) and % new chemical substance (if part of a mixture) at the time of exposure.
(7) -- Mark (X) this column if entries in columns (3) and (5) are confidential business information (CBI).
(8) -- Estimate the maximum number of workers involved in each activity for all sites combined.
(9) -- Mark (X) this column if entry in column (8) is confidential business information (CBI).
(10) and (11) -- Estimate the maximum duration of the activity for any worker in hours per day and days per year.
(12) -- Mark (X) this column if entries in columns (10) and (11) are confidential business information (CBI).

Worker activity (i.e., bag dumping, filling drums) (1)	CBI (2)	Protective Equipment/ Engineering Controls (3)	Binding Option Mark (X) (4)	Physical form(s) & % new substance (5)	Binding Option Mark (X) (6)	CBI (7)	# of Workers Exposed (8)	CBI (9)	Maximum Duration		CBI (12)
									Hrs/Day (10)	Days/Yr (11)	
XXX	X	XXX		XXX		X	XXX	X	XXX	XXX	X

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part II, Section A on the bottom of page 9a. ☐

PMN Page 9a

3. Environmental Release and Disposal -- You must make separate confidentiality claims for the release number and the amount of the new chemical substance released and other release and disposal information. Mark (X) the "Confidential" box next to each item you claim as confidential.

(1) -- Enter the number of each release point identified in the process description, part II, section A, subsection 1d(3).
(2) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology (in kg/day or kg/batch).
(3) -- Mark (X) this column if entries in columns (1) and (2) are confidential business information (CBI).
(4) -- Identify the media (stack air, fugitive air (optional-see Instruction Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify)) to which the new substance will be released from that release point.
(5) -- a. Describe control technology, if any, and control efficiency that will be used to limit the release of the new substance to the environment. For releases disposed of on land, characterize the disposal method and state whether it is approved for disposal of RCRA hazardous waste. On a continuation sheet, for each site describe any additional disposal methods that will be used and whether the waste is subject to secondary or tertiary on-site treatment. b. Estimate the amount released to the environment after control technology (in kg/day).
(6) -- Mark (X) this column if entries in columns (4) and (5) are confidential business information (CBI).
(7) -- Identify the destination(s) of releases to water. Please supply NPDES (National Pollutant Discharge Elimination System) numbers for direct discharges or NPDES numbers of the POTW (Publicly Owned Treatment Works). Mark (X) if the POTW name or NPDES # is confidential business information (CBI).

Release Number	Amount of New Substance Released		CBI	Medium of release e.g. Stack air	Control technology and efficiency (you may wish to optionally attach efficiency data)			CBI
(1)	(2a)	(2b)	(3)	(4)	(5a)	Binding Mark (X)	(5b)	(6)
XXX	XXX	XXX	X		XXX		XXX	X
XXX	XXX	XXX	X		XXX		XXX	X
XXX	XXX	XXX	X		XXX		XXX	X
XXX	XXX	XXX	X		XXX		XXX	X

Mark (X) this box if the data continues on the next page. ☐

(7) Mark (X) the destination(s) of releases to water.		NPDES#	CBI
☒	POTW--provide name(s)	XXX	XXX	☒
☐	Navigable waterway- - provide name(s)			☐
☐	Other--Specify			☐

Enter Attachment filename for Part II, Section A. ☐

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE – Continued

Section B -- INDUSTRIAL SITES CONTROLLED BY OTHERS

The information on pages 10 and 10a refer to consolidated chemical number(s): ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☐ **5** ☐ **6**

Complete section B for typical processing or use operations involving the new chemical substance at sites you do not control. Importers do not have to complete this section for operations outside the U.S.; however, you must report any processing or use activities after import. See the Instructions Manual. *Complete a separate section B for each type of processing, or use operation involving the new chemical substance*. If the same operation is performed at more than one site describe the typical operation common to these sites. Identify additional sites on a continuation sheet.

1(a). Operation Description -- To claim information in this section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

(1) -- Diagram the major unit operation steps and chemical conversions, including interim storage and transport containers (specify - e.g. 5 gallon pails, 55 gallon drums, rail cars, tank trucks, etc). On the diagram, identify by letter and briefly describe each worker activity.

(2) -- Either in the diagram or in the text field 1(b) below, provide the identity, the approximate weight (by kg/day or kg/batch, on an 100% new chemical substance basis), and entry point of all feedstocks (including reactants, solvents and catalysts, etc) and all products, recycle streams, and wastes. Include cleaning chemicals (note frequency if not used daily or per batch).

(3) -- Either in the diagram or in the text field 1(b) below, identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance.

(4) -- Please enter the # of sites (remember to identify the locations of these sites on a continuation sheet):

	Number of Sites		Confidential ☒

1(b). (Optional) This space is for a text description to clarify the diagram above. Confidential ☐

Customers formulate MDI (or TDI), polyols, the PMN substance, and other additives through a mixing head and discharge onto a moving conveyer. The reaction starts and the PU foam formed on the conveyer.

Enter Attachment filename for Part II, Section B on the bottom of page 10a.		☐

Continuation Sheet

ID	P10SB1(a)(4)1	Field	Part II, Section B, 1(a)(4). Operation Site Locations

XXX

PMN Page 10a

2. Worker Exposure/Environmental Release

(1) -- From the diagram above, provide the letter for each worker activity. Complete 2-8 for each worker activity described.
(2) -- Estimate the number of workers exposed for all sites combined.
(4) -- Estimate the typical duration of exposure per worker in (a) hours per day and (b) days per year.
(6) -- Describe physical form of exposure and % new chemical substance (if in mixture), and any protective equipment and engineering controls, if any, used to protect workers.
(7) -- Estimate the percent of the new substance as formulated when packaged or used as a final product.
(9) -- From the process diagram above, enter the number of each release point. Complete 9-13 for each release point identified.
(10) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology to the environment (in kg/day or kg/batch).
(12) -- Describe media of release i.e. stack air, fugitive air (optional-see Instructions Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify) and control technology, if any, that will be used to limit the release of the new substance to the environment.
(14) -- Identify byproducts which may result from the operation.
(3), (5), (8), (11), (13) and (15) -- Mark (X) this column if any of the proceeding entries are confidential business information (CBI).

Letter of Activity	# of Workers Exposed	CBI	Duration of Exposure		CBI	Protective Equip./Engineering Controls/Physical Form	% new substance	% in Formulation	CBI
(1)	(2)	(3)	(4a)	(4b)	(5)	(6)	(6)	(7)	(8)
chargin g/formul	1		8	200		XXX	XXX	XXX	X

Release Number	Amount of New Substance Released		CBI	Media of Release & Control Technology	CBI
(9)	(10a)	(10b)	(11)	(12)	(13)
	0	100%		recycled	

Mark (X) this box if the data continues on the next page. ☐

(14) Byproducts: none **(15) CBI** ☐

Enter Attachment filename for Part II, Section B. ☐

OPTIONAL POLLUTION PREVENTION INFORMATION

To claim information in the following section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

In this section you may provide information not reported elsewhere in this form regarding your efforts to reduce or minimize potential risks associated with activities surrounding manufacturing, processing, use and disposal of the PMN substance. Please include new information pertinent to pollution prevention, including source reduction, recycling activities and safer processes or products available due to the new chemical substance. Source reduction includes the reduction in the amount or toxicity of chemical wastes by technological modification, process and procedure modification, product reformulation, and/or raw materials substitution. Recycling refers to the reclamation of useful chemical components from wastes that would otherwise be treated or released as air emissions or water discharges, or land disposal. Quantitative or qualitative descriptions of pollution prevention, source reduction and recycling should emphasize potential risk reduction in addition to compliance with existing regulatory requirements. The EPA is interested in the information to assess overall net reductions in toxicity or environmental releases and exposures, not the shifting of risks to other media (e.g., air to water) or nonenvironmental areas (e.g., occupational or consumer exposure). To the extent known, information about the technology being replaced will assist EPA in its relative risk determination. In addition, information on the relative cost or performance characteristics of the PMN substance to potential alternatives may be provided.

Describe the expected net benefits, such as

(1) an overall reduction in risk to human health or the environment;
(2) a reduction in the generation of waste materials through recycling, source reduction or other means;
(3) a reduction in the use of hazardous starting materials, reagents, or feedstocks;
(4) a reduction in potential toxicity, human exposure and/or environmental release; or
(5) the extent to which the new chemical substance may be a substitute for an existing substance that poses a greater overall risk to human health or the environment.

Information provided in this section will be taken into consideration during the review of this substance. See PMN Instructions Manual and Pollution Prevention Guidance manual for guidance and examples.

The PMN substance is a halogen-free, low-vapor-pressure flame retardant maily used in PU foam application. The PMN substance would be a drop-in replacement/alternative for TDCP, a halogen based flame retardant. The PMN substance is an efficient FR where less chemical is used in total.

In addition to acute toxicity studies, we have also performed chronic daphnia and 28-day sub-acute toxicity studiy. The No Observed Effect Concentration (NOEC) in Daphnia magna after exposure of 21 day is 0.90 mg a.i./L. The 28-day NOAEL is 300 mg/kg/day (4 weeks oral rat).

When we compare this NOAEL value to the actual exposure levels expected either from the plant waste water or the product's use, it can be seen that it is far above those levels (please refer to the attached wastewater treatability study, reference number # 030 the SBRT report) where the concentration of E08-16T in the plant's effluent is below 0.2 mg/L (LOD).

It can be concluded that the plant's effluent is not a concern to the environment.

Enter Attachment filename for Pollution Prevention Page 11.		☐

Part III -- LIST OF ATTACHMENTS

Attach continuation sheets for sections of the form, test data and other data (including physical/chemical properties and structure/activity information), and optional information after this page. Clearly identify the attachment and the section of the form to which it relates, if appropriate. Number consecutively the pages of any paper attachments. In the Number of Pages column below, enter the inclusive page numbers of each attachment for paper submissions or enter the total number of pages for each attachment for electronic submissions. Electronic attachments can be identified by filename.
Mark (X) the "Confidential" box next to any attachment name or filename you claim as confidential. Read the Instructions Manual for guidance on how to claim any information in an attachment as confidential. You must include with the sanitized copy of the notice form a sanitized version of any attachment in which you claim information as confidential.

#	Attachment Name	Attachment Filename	Number of Pages	Associated PMN Section Number	CBI
001	STN CASRN E08_16T Sanitized	STN_CASRN_E08_16T_Sanitized.pdf	1	Pt.I, Sec.B, 1c.	
002	E08-16T(HF-8) Chemical structure sanitized	E08_16T_chemical_structure_Sanitized.pdf	1	Pt.I, Sec.B, 1e.	
003	E08-16 Production process Sanitized	E08_16T_Production_process_Sanitized.pdf	1	Pt.2, Sec.A, 1d.	
004	E08-16T composition CoA sanitized	E08_16T_composition_CoA_sanitized.pdf	1		
005	E08-16T HF-8 FTIR spectrum	E08_16T_FTIR.pdf	1	Worksheet: Spectra	
006	E08-16T HF-8 GC spectrum	E08_16T_GC.pdf	1		
007	E08-16T HF-8 HPLC spectrum	E08_16T_HPLC.pdf	1		
008	E08-16T HF-8 NMR1	E08_16T_NMR1.pdf	1		
009	E08-16T HF-8 NMR2	E08_16T_NMR2.pdf	1		
010	E08-16T HF-8 TGA	E08_16T_TGA.pdf	1		
011	E08-16T HF-8 MSDS	E08_16T_MSDS_V5.pdf	7	Worksheet: Physical State | Worksheet: Melting temp	
012	E08-16T HF-8 Summary of studies sanitized	E08_16T_Summary_of_studies_	2		
013	E08-16T Water solubility Sanitized	E08_16T_water_solubility_Sanitized.pdf	43	Worksheet: Solubility In Water	
014	E08-16T partition Coeff Sanitized	E08_16T_O_W_partition_Coeff_Sanitized.pdf	56	Worksheet: Octanol / water partition coefficient	
015	E08-16T Activated Sludge Sanitized	E08_16T_Activated_Sludge_San	35		
017	E08-16T Acute tox daphnia Sanitized	E08_16T_Acute_tox_Daphnia_Sanitized.pdf	56		
018	E08-16T Acute tox fish Sanitized	E08_16T_Acute_tox_fish_Sanitized.pdf	57		
019	E08-16T Acute Oral tox Sanitized	E08_16T_Acute_Oral_tox_Sanitized.pdf	28		
020	E08-16T Acute Dermal tox Sanitized	E08_16T_Acute_Dermal_tox_Sa	28		
021	E08-16T Skin Irritation Sanitized	E08_16T_Skin_Irritation_Sanitized.pdf	33		
023	E08-16T Ames Sanitized	E08_16T_Ames_Sanitized.pdf	51		

Mark (X) this box if the data continues on the next page. [X]

Part III -- LIST OF ATTACHMENTS

Attach continuation sheets for sections of the form, test data and other data (including physical/chemical properties and structure/activity information), and optional information after this page. Clearly identify the attachment and the section of the form to which it relates, if appropriate. Number consecutively the pages of any paper attachments. In the Number of Pages column below, enter the inclusive page numbers of each attachment for paper submissions or enter the total number of pages for each attachment for electronic submissions. Electronic attachments can be identified by filename.
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#	Attachment Name	Attachment Filename	Number of Pages	Associated PMN Section Number	CBI
025	E08-16T Analytical verification freshwater Sanitized	E08_16T_PB_Analytical_verification_in_Freshwater_Sanitized.pdf	39		
027	E08-16T QSAR toxicity report	E08_16T_QSAR_Toxicokin_report140512.docx	6		
028	E08-16T HF-8 chronic daphnia report sanitized	E08_16T_chronic_daphnia_report_sanitized.pdf	84		
029	E08-16T HF-8 analytical verification sanitized	E08_16T_analytical_verification_sanitized.pdf	39		
030	SBRT waste water compatibility study	SBRT_ICL_waste_water_compatibility_study_Final_Report.pdf	15		
031	Waste water Analysis 5-23-12	E08_16T_Waste_Water_Analysis052313.docx	1		

Mark (X) this box if the data continues on the next page. ☐

PMN Page 13

PHYSICAL AND CHEMICAL PROPERTIES WORKSHEET

The information on this page refers to chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

To assist EPA's review of physical and chemical properties data, please complete the following worksheet for data you provide and include it in the notice. Identify the property measured, the value of the property, the units in which the property is measured (as necessary), and whether or not the property is claimed as confidential. Give the attachment number (found on page 12) in column (b). The physical state of the neat substance should be provided. These measured properties should be for the neat (100% pure) chemical substance. Properties that are measured for mixtures or formulations should be so noted (% PMN substance in __). You are not required to submit this worksheet; however, EPA strongly recommends that you do so, as it will simplify the review and ensure that confidential information is properly protected. You should submit this worksheet as a supplement to your submission of test data. This worksheet is not a substitute for submission of test data.

Property (a)		Unit	Mark X if Provided	Attachment Number (b)	Value (c)			Measured or Estimate (M or E)	CBI Mark (X) (d)
					(solid)	(liquid)	(gas)		
Physical state of neat substance			X	011	X	☐	☐	Measured	
Vapor Pressure @ Temperature		°C	☐				Torr		
Density/relative density			☐				g/cm3		
Solubility			☐				g/L		
@ Temperature		°C							
Solvent									
Solubility in Water @ Temperature	20	°C	X	013	0.078		g/L	Measured	
Melting Temperature			X	011	30		°C	Estimate	
Boiling / Sublimation temperature @		Torr	☐				°C		
Spectra			X	005	FTIR			Measured	
Dissociation constant			☐						
Octanol / water partition coefficient			X	014	LogKow=3.16			Measured	
Henry's Law constant			☐						
Volatilization from water			☐						
Volatilization from soil			☐						
pH@ concentration			☐						
Flammability			☐						
Explodability			☐						
Adsorption / Coefficient			☐						
Particle Size Distribution			☐						
Other – Specify			☐						

ATTACHMENT HEADER SHEET

Attachment Number 001

Attachment Name

STN CASRN E08_16T Sanitized

Associated PMN Section Number

Pt.I, Sec.B, 1c.

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 002

Attachment Name

E08-16T(HF-8) Chemical structure sanitized

Associated PMN Section Number

Pt.I, Sec.B, 1e.

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 003

Attachment Name

E08-16 Production process Sanitized

Associated PMN Section Number

Pt.2, Sec.A, 1d.

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 004

Attachment Name

E08-16T composition CoA sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 005

Attachment Name

E08-16T HF-8 FTIR spectrum

Associated PMN Section Number

Worksheet: Spectra

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 006

Attachment Name

E08-16T HF-8 GC spectrum

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 007

Attachment Name

E08-16T HF-8 HPLC spectrum

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 008

Attachment Name

E08-16T HF-8 NMR1

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 009

Attachment Name

E08-16T HF-8 NMR2

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 010

Attachment Name

E08-16T HF-8 TGA

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 011

Attachment Name

E08-16T HF-8 MSDS

Associated PMN Section Number

Worksheet: Physical State | Worksheet: Melting temp

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 012

Attachment Name

E08-16T HF-8 Summary of studies sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 013

Attachment Name

E08-16T Water solubility Sanitized

Associated PMN Section Number

Worksheet: Solubility In Water

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 014

Attachment Name

E08-16T partition Coeff Sanitized

Associated PMN Section Number

Worksheet: Octanol / water partition coefficient

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 015

Attachment Name

E08-16T Activated Sludge Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 017

Attachment Name

E08-16T Acute tox daphnia Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 018

Attachment Name

E08-16T Acute tox fish Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 019

Attachment Name

E08-16T Acute Oral tox Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 020

Attachment Name

E08-16T Acute Dermal tox Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 021

Attachment Name

E08-16T Skin Irritation Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 023

Attachment Name

E08-16T Ames Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 025

Attachment Name

E08-16T Analytical verification freshwater Sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 027

Attachment Name

E08-16T QSAR toxicity report

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 028

Attachment Name

E08-16T HF-8 chronic daphnia report sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 029

Attachment Name

E08-16T HF-8 analytical verification sanitized

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 030

Attachment Name

SBRT waste water compatibility study

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

ATTACHMENT HEADER SHEET

Attachment Number 031

Attachment Name

Waste water Analysis 5-23-12

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

PMN_121015937853300

Focus Report

New Chemicals Program

PMN Number: **P-13-0024**

Focus Date:	11/05/2012	Report Status:	Completed
Consolidated Set:			
Focus Chair:	Darlene Jones	Contractor:	Bryan Amagai

I. Notice Information

Submitter:	ICL-IP America, Inc. CAS Number: [redacted]
Chemical Name:	[redacted]
Use:	Additive flame retardant for flexible polyurethane foams. The PMN substance is phosphate ester based halogen-free flame retardant. The PMN material is intended to be formulated [redacted]. P2REC CRSS: forward. P2 Claim: The PMN substance would be a drop-in replacement/alternative for TDCP, a halogen based flame retardant used in polyurethane foams. [redacted]
Other Uses:	[redacted]
PV-Max:	[redacted] Kg/yr
Manufacture:	X Import: X

II. SAT Results

(1) **Health Rating:** 1-2 **Eco Rating:** 3 **Comments:** ;

Occupational: 1B **Non-Occupational:** 3 **Environmental:** 3

(1) **PBT:** 1 1 2 **Comments:**

III. OTHER FACTORS

Categories:

Health Chemical Category:

Ecotox SAR and Category: esters; Esters

Related Cases/Regulatory History:

Health related Cases: [redacted]

Ecotox Related Cases: Analog: [redacted]

Regulatory History: [redacted] - PENDING STANDARD REVIEW

CRSS P2Rec: P2Rec-P2 Recognition; [redacted]

MSDS/Label Information:

MSDS: Yes Label: No

General Equipment: neoprene gloves / chemical safety goggles / use protective clothing impervious to this material / adequate ventilation is recommended

Respirator: in case of insufficient ventilation wear suitable respiratory equipment

Health Effects: may cause mild irritation to the eyes

TLV/PEL (PMN or raw material): - none established

Exposure Based Information:

Exposure Based Review: [redacted]

Exposure Based Review (Eco): [redacted]

Exposure Based Review (Non Occupatuional):

Exposure Based Review (Health): [redacted]

Exposure Based (Occupational): [redacted]

Exposure Based (Environmental):

IV. Summary of SAT Assessment

Fate:

Fate Summary:

P-13-0024
FATE:
[redacted] with MP = 25-35 C (Sub. Est.), 83 °C (E)
log Kow = 3.16 (M)
S = 78 mg/L at 25 C (M)
VP = 6.7E-6 torr at 25 C (E)
BP = Dec. 162 C (M)
H = 2.95E-7 (E)
log Koc = 3.19 (E)
log Fish BCF = 0.93 (E)
log Fish BAF = 1.42 (E)
POTW removal (%) = 25-50 via sorption and possible partial biodeg; OECD 301D (Closed Btl): NRB.
Time for complete ultimate aerobic biodeg = wk
Sorption to soils/sediments = moderate
PBT Potential: P1B1
*CEB FATE: Migration to ground water = moderate

Health:

Health Summary:

Absorption is moderate through the skin and good through the lungs and GI tract based on physical/chemical properties and analogs. The PMN compound is a mild eye irritant and is likely to be a mild irritant to the lungs and mucous membranes. There is concern for liver toxicity and uncertain concern for mutagenicity by analogy to [redacted] ([redacted] [redacted]. The analog caused liver effects at 1000 mg/kg in a 28-day oral study in rats with increased liver weights at 150 mg/kg and a NOAEL of 150 mg/kg. The same analog was negative in Salmonella and E coli but positive for chromosome aberrations in CHL cells. The PMN compound also caused liver effects in the submitted 28-day study with a reported NOAEL of 300 mg/kg. The cursory review of this study indicates that there is no a NOAEL for this study and that effects were seen in all dose groups with a LOEL of 100 mg/kg. Effects were noted in the liver, ovaries, adrenals, and sperm. Low moderate concern.

Test Data:

negative in Salmonella and E coli with and without activation
acute oral study in rats - no deaths at 2000 mg/kg, hunched posture, piloerection, ataxia, lethargy
acute dermal study in rats - no deaths or signs of toxicity at 2000 mg/kg
not a skin irritant in rabbits
mild eye irritant in rabbits, all effects cleared by 72 hours
not a dermal sensitizer in the mouse local lymph node assay at concentrations of 25, 50, and 100%
28-day oral study in rats (100, 300, 1000 mg/kg)- NOAEL = 300 mg/kg; 2 high dose females were killed on day 3 due to poor condition; effects on liver, adrenals, kidneys, caecum, and ovaries at 1000 mg/kg (study author conclusions); RAD cursary review concluded there is no NOAEL with a LOEL = 100 mg/kg

Ecotox:

Ecotox Values:

Fish 96-h LC50:	1.6(P)	6.8(M)
Daphnid 48-h LC50:	2.6(P)	3.8(M)
Green algal 96-h EC50:	0.76(P)	
Fish Chronic Value:	0.074(P)	
Daphnid ChV:	0.90(P)	1.5(M)
Algal ChV:	0.42(P)	

Ecotox values comments:

Predictions are based on SARs for esters; SAR chemical class = [redacted]; log Kow = 4.38 (EPI), 3.16 (M); solid with mp = 35 C (M); S = 8.6 mg/L at 20 C (P); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; DWhardness <150.0 mg/L as CaCO3; and DWTOC <2.0 mg/L;

Ecotoxicity Study Review for [redacted]

[redacted]
P13-0024 October 23, 2012

The PMN material is a [redacted], with a melting point of = 25-35 °C (est.); water solubility of 78 mg/L (OECD 105) and log P of 3.16 (OECD 117). [redacted] PI estimated data (input water solubility of 78 mg/L, log P of 3.16): boiling point of 381 °C; vapor pressure of 6.72E-6 torr; water solubility of 0.025 g/L; and a log P of 4.38. ACD Labs estimated data (STN pprop): boiling point of 345.7 °C; vapor pressure of 1.21E-4 torr; water solubility of 0.18 g/L; log P of 4.0; %[redacted]

96-hour Acute Fish Toxicity Test
Fathead minnows (Pimephales promelas) were exposed to the PMN P-13-0024 (98% purity) under static conditions in a 96-hour LC50 test by Wildlife International, Ltd. This study was reported to follow OECD 203 test guideline, OPPTS 850.1075, and ASTM Standard E729-96. Following a range-finding test, two replicates of ten fathead minnows were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.82, 1.5, 2.7, 5.0 and 9.0 mg a.i./L. Corresponding mean measured concentrations of < 0.600 (LOQ), 0.90, 1.6, 2.7, 5.2 and 8.9 mg a.i./L were determined using HPLC analysis with a limit of quantitation (LOQ) of 0.600 mg a.i./L. Individual test solutions were prepared in each of two replicate test chambers at nominal concentrations of 0.82, 1.5, 2.7, 5.0 and 9.0 mg a.i./L by mixing calculated amounts of the test substance into 15 L of dilution water (Wildlife International, Ltd. well water). Amounts of the test item were weighed into tared glass beakers and sonicated for approximately 10 minutes. The beakers were rinsed with a portion of the 15 L dilution water into 500 mL flasks and sonicated for approximately 90 minutes. The flasks were then rinsed into the appropriate test chamber using a portion of the pre-measured 15 L of dilution water. Each solution was stirred using a top-down electric mixer overnight. All test solutions were adjusted to 100% active ingredient during preparation, based on the test substance purity of 98%. Samples were collected from each test chamber of each treatment and control group at the beginning of the test and at 48 and 96 hours (±1 hour) of the test to measure concentrations of the test substance. Due to 100% mortality in the 9.0 mg a.i./L treatment group, analytical sampling in this treatment was discontinued after 48 hours. Test solutions appeared clear and colorless during the test, with no evidence of precipitation observed. Measured concentrations of the samples ranged from approximately 94 to 113% of nominal. Over the course of testing, temperature ranged from 21.8 – 22.6˚C, pH ranged from 8.5 – 8.7 and dissolved oxygen ranged from 7.8 – 8.6. Dilution water hardness was 148 mg CaCO3/L. The loading rate was 0.07 g fish/L. All fish in the 8.9 mg a.i./L dose group were found dead within 48 hours of test initiation. While no mortalities were observed in the 5.2 mg a.i./L treatment group, fish in this group exhibited signs of toxicity including surfacing, loss of equilibrium, erratic swimming and lethargy. All fathead minnows in the negative control group, and in the 0.90, 1.6 and 2.7 mg a.i./L treatment groups appeared normal throughout the test with no mortalities or signs of toxicity observed. The 96-hour LC50, based on measured concentrations was 6.8 mg a.i./L.
96-hour LC50 = 6.8 mg a.i./L

48-hour Acute Daphnia Toxicity Test
Water fleas (Daphnia magna) were exposed to the PMN P-13-0024 (98% purity) under static conditions in a 48-hour daphnia immobilization test by Wildlife International, Ltd. The study was reported to follow OECD test guideline 202, OPPTS 850.1010 and ASTM Standard E729-96. Two replicates of 10 D. magna were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.63, 1.3, 2.5, 5.0 and 10 mg a.i./L. Corresponding mean measured concentrations of < 0.400 (LOQ), 0.62, 1.2, 2.4, 4.5 and 8.0 mg a.i./L were determined via HPLC-UV analysis with a limit of quantitation (LOQ) of 0.400 mg a.i./L). Two primary stock solutions were prepared. A 10 mg a.i./L nominal concentration stock, the highest concentration stock, was prepared by mixing a calculated amount of test substance in 1 L of dilution water. The test substance was weighed into a tared beaker and sonicated approximately five minutes three times to facilitate transfer to a 1 L volumetric flask. The stock solution was sonicated for a total of approximately 50 minutes and then mixed by inversion. A second primary stock solution was prepared by mixing a calculated amount of test substance in 2 L of dilution water at a nominal concentration of 5.0 mg a.i./L in the same manner. The stock solution was sonicated for a total of approximately 35 minutes and then mixed by inversion. The primary stock solutions were adjusted to 100% active ingredient during preparation, based on the test substance purity (98 area %).

Aliquots of the 5.0 mg a.i./L primary stock solution were proportionally diluted with dilution water to prepare test solutions at the remaining nominal concentrations. The solutions were mixed by inversion and approximately 250 mL of solution was placed in each of two replicate test chambers per treatment group. Mean measured concentrations ranged from 76.5 – 100% of nominal values. Over the course of testing, temperature ranged from 19.9 – 20.7ºC, pH ranged from 8.2 – 8.6 and the dissolved oxygen concentration ranged from 8.0 – 9.0 mg/L. Dilution water hardness was 138 mg CaCO3/L and total organic carbon (TOC) was < 1 mg C/L. A loading rate of 50 daphnids/L was calculated. All daphnids in the control and 0.62, 1.2, and 2.4 mg a.i./L treatment groups appeared normal throughout the test. Percent immobilization at 48-hours was 0%, 0%, 0%, 0%, 75% and 100% at measured concentrations of 0 (control), 0.62, 1.2, 2.4, 4.5 and 8.0 mg a.i./L, respectively. Surviving daphnids in the 4.5 mg a.i./L treatment group exhibited lethargy at test termination. The mean measured 48-hour EC50 is 3.8 mg a.i./L.
48-hour EC50 = 3.8 mg/L

21-day Chronic Daphnia Reproduction Toxicity Test
Water fleas (Daphnia magna) were exposed to PMN P-13-0024 (98% purity) under static-renewal conditions with renewal every 2 to 3 days in a 21-day reproduction toxicity test by Wildlife International, Ltd. The study was reported to follow OECD test guideline 211, OPPTS 850.1300 and ASTM E 1193-97. Following a range-finding study, D. magna were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.077, 0.19, 0.48, 1.2 and 3 mg a.i./L. Corresponding mean measured concentrations of < 0.0500 (LOQ), 0.066, 0.16, 0.40, 0.90 and 2.5 mg a.i./L were determined using HPLC analysis with a limit of quantitation (LOQ) of 0.0500 mg a.i./L. Ten replicate test chambers containing one daphnid each were tested for each treatment group and 20 replicate test chambers were tested for the control group. Test solutions were prepared every 2 to 3 days during the test. All test solutions were adjusted to 100% active ingredient during preparation, based on 99% purity of the PMN substance. A primary stock solution was prepared in dilution water at a nominal concentration of 3.0 mg a.i./L, equivalent to the highest concentration tested. The stock solution was mixed by sonication for approximately 40 to 50 minutes, followed by inversion, and appeared clear and colorless. Proportional dilutions of the primary stock solution were made in dilution water to prepare test solutions at nominal concentrations of 0.077, 0.19, 0.48 and 1.2 mg a.i./L. The test solutions were mixed by inversion, and 200 mL aliquots were added to each test chamber. All test solution appeared clear and colorless after mixing. Test chambers were loosely covered with plastic petri dishes. Test solutions appeared clear and green due to algal feed during the test, with no evidence of precipitation observed. Mean measured test concentrations were 75 – 86% of nominal. Over the course of the study, water temperature ranged from 19.0 – 20.9˚C, pH ranged from 8.1 – 8.7 and dissolved oxygen ranged from 7.0 – 9.1 mg/L. Dilution water hardness and TOC was 140 – 144 mg CaCO3/L and < 1 mg C/L, respectively. A loading rate of 5 daphnids/L was calculated. Survival in the 0.066, 0.16, 0.40, 0.90 and 2.5 mg a.i./L treatment groups at test termination was 70, 80, 60, 80 and 80%, respectively. All surviving first-generation daphnids in the 2.5 mg a.i./L treatment group were small in stature compared to the control organisms from Day 12 to test end and they also appeared pale in coloration from Day 16 through Day 21 of the test. At test termination, surviving daphnids in the 0.066, 0.16, 0.40 and 0.90 mg a.i./L treatment groups were normal in appearance. Daphnids exposed to concentrations ≥ 2.5 mg a.i./L had statistically significant reductions in reproduction, length and weight in comparison to the negative control. The 21-day EC50 values, based on mean measured concentrations, are > 2.5 and 1.6 mg a.i./L for immobilization and reproduction, respectively. The 21-day NOEC and LOEC, based on mean measured concentrations, are 0.90 and 2.5 mg a.i./L, respectively, which results in a ChV (geometric mean of the NOEC and LOEC) of 1.5 mg/L.
21-day EC50 (immobilization) > 2.5 mg a.i./L
21-day EC50 (reproduction) = 1.6 mg a.i./mg/L
21-day NOEC = 0.90 mg a.i./L
21-day LOEC = 2.5 mg a.i./L
ChV = 1.5 mg a.i./L

Conclusion
All three tests are considered acceptable. Due to the lack of an algal toxicity test, the ECOSAR (v.1.10) predictions will be used to assess toxicity to algae. The SAR chemical category esters predict algae to be the most sensitive species with a 96-hour EC50 for algae of 0.76 mg/L. The SAR chemical category esters predict fish to be the most sensitive species for chronic toxicity with a value for fish of 0.074 mg/L. The acute concern concentration (CC) is determined by diving 0.76

mg/L by an assessment factor of 4 to yield 190 µg/L or 190 ppb. The chronic CC is determined by dividing 0.074 mg/L by an assessment factor of 10 to yield 7.4 µg/L or 7.4 ppb.

Chronic CC = 7.4 ppb Acute CC = 190 ppb

Reviewer: L. Newsome

Ecotox Factors:

Assessment Factor: 10

Concern Concentration - Chronic Value: 7

V. Summary of Exposures/Releases

Engineering Summary: P-13-0024

Exposures/Releases	Release	Release	Release
Scenario	**Use: Polyurethane Foam**	**Use: Polyurethane Foam**	**Manufacturing**
Sites	[redacted]	[redacted]	[redacted]
Media	**Water or Incineration or Landfill**	**Water or Incineration or Landfill**	**Water**
Descriptor A	High End	Conservative	Output 2
Quantity A (Release = kg/site/day; Exposure = mg/day)	[redacted]	[redacted]	[redacted]
Frequency A (day/year)	[redacted]	[redacted]	[redacted]
Descriptor B			
Quantity B (Release = kg/site/day; Exposure = mg/day)			
Frequency B (day/year)			
From	[redacted]	[redacted]	[redacted]
Workers			
Exposure Type			

Engineering Summary: Exposures/Releases	Release	Release	Exposure
Scenario	**Manufacturing**	**Manufacturing**	**Use: Polyurethane Foam**
Sites	[redacted]	[redacted]	[redacted]
Media	**Incineration**	**Water**	**Dermal**
Descriptor A	Output 2	Conservative	High End
Quantity A (Release = kg/site/day; Exposure = mg/day)	[redacted]	[redacted]	[redacted]
Frequency A (day/year)	[redacted]	[redacted]	[redacted]
Descriptor B			
Quantity B (Release = kg/site/day; Exposure = mg/day)			
Frequency B (day/year)			
From	[redacted]	[redacted]	[redacted]
Workers			[redacted]
Exposure Type			[redacted]

V. Summary of Exposures/Releases

Engineering Summary: P-13-0024

Exposures/Releases	Exposure		
Scenario	[redacted]		
Sites	[redacted]		
Media	**Dermal**		
Descriptor A	High End		
Quantity A (Release = kg/site/day; Exposure = mg/day)	[redacted]		
Frequency A (day/year)	[redacted]		
Descriptor B			
Quantity B (Release = kg/site/day; Exposure = mg/day)			
Frequency B (day/year)			
From	[redacted]		
Workers			
Exposure Type	[redacted]		

VI. Focus Decision and Rationale

Regulatory Actions

Regulatory Decision: PMN Standard Review Decision Date: 11/05/2012
Type of Decision:

Rationale: P-13-0024 will be placed into standard review for human health concerns. A T.I., full team, and schedule will be needed for the review process. P-13-0024 will also be regulated under the TSCA 5(e) category (esters) Ban Pending Upfront Testing under the risk and exposure based authority for ecotoxicity concerns and exposure based authority for human health concerns. Human health hazard concerns were low-moderate for drinking water, inhalation, and dermal exposures. The required human health testing will be the combined repeated dose toxicity with the reproduction/development toxicity screening test (OPPTS Test Guidelines 870.3650.) Ecotoxicity hazard concerns were high based on submitted test data for esters. Potential risk to the environment was high due to exceedences of both the acute and chronic COCs during the release period. During use operations the chronic COC of 7 ppb was exceeded 200/[redacted] days/yr (SWC: 1.93E+04 ppb). The required ecotoxicity testing will be the fish early-life stage toxicity test (OPPTS 850.1400) and the algal toxicity test (OCSPP 850.4500). No fate testing is desired. No CEB exposure-based criteria were met. The following EAB exposure-based criteria were met: Drinking (Surface) Water Dose: 1.62E-02 mg/kg/day, Groundwater Dose: 1.86E-02 mg/kg/day, Surface Water Release After Treatment: 1.50E+05 kg/yr, and Total Release After Treatment: 2.00E+05 kg/yr.

Summary of exposures and releases

[redacted]
[redacted] site, [redacted] days/yr, [redacted] workers
Inhalation: negligible (VP < 0.001 torr)
Dermal: [redacted] mg/day [redacted]%)

Releases to Water: [redacted] kg/site-day over [redacted] days/yr
Releases to Water: [redacted] kg/site-day over [redacted] days/yr
Releases via Incineration: [redacted] kg/site-day over [redacted] days/yr

Fate Releases to Water ([redacted] Removal)
SWC: 0.10 ppb
DW: LADD: 3.51E-09 mg/kg/day, ADR: 6.41E-06 mg/kg/day
FI: LADD: 1.27E-10 mg/kg/day, ADR: 3.19E-07 mg/kg/day

Fate Releases to Water ([redacted] Removal)
SWC: 1.48E-03 ppb
DW: LADD: 1.74E-09 mg/kg/day, ADR: 9.30E-08 mg/kg/day
FI: LADD: 6.30E-11 mg/kg/day, ADR: 4.63E-09 mg/kg/day

[redacted]
[redacted] sites, [redacted] days/yr, [redacted] workers
Inhalation: negligible (VP < 0.001 torr)
Dermal: 1.8E+3 mg/day ([redacted]

Releases to Water: [redacted] kg/site-day over [redacted] days/yr
Or Incineration or Landfill
Releases to Water: [redacted] kg/site-day over [redacted] days/yr
Or Incineration or Landfill

Fate Releases to Water ([redacted] Removal)
SWC: 1.93E+04 ppb
DW: LADD: 1.62E-02 mg/kg/day, ADR: 0.94 mg/kg/day
FI: LADD: 5.86E-04 mg/kg/day, ADR: 5.75E-02 mg/kg/day
>COC (7.00 ppb) 200/[redacted] days/yr

Fate Releases via Landfill: LADD: 1.86E-02 mg/kg/day

P2 Rec Comments:

Testing:

Final Recommended:

Health:
Eco:
Fate:
Other:

SAT Report

PMN Number: **P-13-0024**
SAT Date: **10/23/2012**
Print Date: **4/20/2015**

Related cases: [redacted]
Health related cases: [redacted]
Ecotox related cases: Analog: [redacted]

Concern levels:

Type of Concern:	Health	Eco	Comments
Level of Concern:	1-2	3	

Persistence	Bioaccum	Toxicity	Comments
1	1	2	

Exposure Based Review:
Health: Yes
Ecotox: Yes

Routes of exposure:
Health: Dermal Drinking Water Inhalation
Ecotox: All releases to water
Fate: ;

P2Rec Comments:
Comment: Forward

Keywords:
Keywords: LIVER, UNCERT-MUTA, AQUATOX-A,C

Summary of Assessment:

Fate:
Fate Summary: P-13-0024
FATE:
[redacted] with MP = 25-35 C (Sub. Est.), 83 °C (E)
log Kow = 3.16 (M)
S = 78 mg/L at 25 C (M)
VP = 6.7E-6 torr at 25 C (E)
BP = Dec. 162 C (M)

H = 2.95E-7 (E)
log Koc = 3.19 (E)
log Fish BCF = 0.93 (E)
log Fish BAF = 1.42 (E)
POTW removal (%) = 25-50 via sorption and possible partial biodeg; OECD 301D (Closed Btl): NRB.
Time for complete ultimate aerobic biodeg = wk
Sorption to soils/sediments = moderate
PBT Potential: P1B1
*CEB FATE: Migration to ground water = moderate

Health:

Health Summary: Absorption is moderate through the skin and good through the lungs and GI tract based on physical/chemical properties and analogs. The PMN compound is a mild eye irritant and is likely to be a mild irritant to the lungs and mucous membranes. There is concern for liver toxicity and uncertain concern for mutagenicity by analogy to [redacted] ([redacted]). The analog caused liver effects at 1000 mg/kg in a 28-day oral study in rats with increased liver weights at 150 mg/kg and a NOAEL of 150 mg/kg. The same analog was negative in Salmonella and E coli but positive for chromosome aberrations in CHL cells. The PMN compound also caused liver effects in the submitted 28-day study with a reported NOAEL of 300 mg/kg. The cursory review of this study indicates that there is no a NOAEL for this study and that effects were seen in all dose groups with a LOEL of 100 mg/kg. Effects were noted in the liver, ovaries, adrenals, and sperm. Low moderate concern.

Test Data: negative in Salmonella and E coli with and without activation
acute oral study in rats - no deaths at 2000 mg/kg, hunched posture, piloerection, ataxia, lethargy
acute dermal study in rats - no deaths or signs of toxicity at 2000 mg/kg
not a skin irritant in rabbits
mild eye irritant in rabbits, all effects cleared by 72 hours
not a dermal sensitizer in the mouse local lymph node assay at concentrations of 25, 50, and 100%
28-day oral study in rats (100, 300, 1000 mg/kg)- NOAEL = 300 mg/kg; 2 high dose females were killed on day 3 due to poor condition; effects on liver, adrenals, kidneys, caecum, and ovaries at 1000 mg/kg (study author conclusions); RAD cursary review concluded there is no NOAEL with a LOEL = 100 mg/kg

Ecotox:

Test Organism	Test Type	Test End Point	Predicted	Measured	Comments
fish	**96-h**	**LC50**	1.6	6.8	
daphnid	**48-h**	**LC50**	2.6	3.8	
green algal	**96-h**	**EC50**	0.76		
fish	**_**	**chronic value**	0.074		

daphnid	**_**	**chronic value**	0.90	1.5	
algal	**_**	**chronic value**	0.42		
Sewage Sludge	**3-h**	**EC50**	**_**		
Sewage Sludge	**_**	**Chronic Value**	**_**		

Ecotox Values Comments: Predictions are based on SARs for esters; SAR chemical class = e[redacted]
C (P); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; DWhardness <150.0 mg/L as CaCO3; and DWTOC <2.0 mg/L;

Ecotoxicity Study Review for [redacted]
P13-0024
October 23, 2012

The PMN material is a [redacted], with a melting point of = 25-35 °C (est.); water solubility of 78 mg/L (OECD 105) and log P of 3.16 (OECD 117). The submitted TGA shows: loss of mass (decomposition) > 162 °C; submitted IR, 1H NMR, and 31P NMR are in agreement with the structure provided. EPI estimated data (input water solubility of 78 mg/L, log P of 3.16): boiling point of 381 °C; vapor pressure of 6.72E-6 torr; water solubility of 0.025 g/L; and a log P of 4.38. ACD Labs estimated data (STN pprop): boiling point of 345.7 °C; vapor pressure of 1.21E-4 torr; water solubility of 0.18 g/L; log P of 4.0; %P of 10.4%; %phosphate of 33%.

96-hour Acute Fish Toxicity Test
Fathead minnows (Pimephales promelas) were exposed to the PMN P-13-0024 (98% purity) under static conditions in a 96-hour LC50 test by [redacted] This study was reported to follow OECD 203 test guideline, OPPTS 850.1075, and ASTM Standard E729-96. Following a range-finding test, two replicates of ten fathead minnows were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.82, 1.5, 2.7, 5.0 and 9.0 mg a.i./L. Corresponding mean measured concentrations of < 0.600 (LOQ), 0.90, 1.6, 2.7, 5.2 and 8.9 mg a.i./L were determined using HPLC analysis with a limit of quantitation (LOQ) of 0.600 mg a.i./L. Individual test solutions were prepared in each of two replicate test chambers at nominal concentrations of 0.82, 1.5, 2.7, 5.0 and 9.0 mg a.i./L by mixing calculated amounts of the test substance into 15 L of dilution water (Wildlife International, Ltd. well water). Amounts of the test item were weighed into tared glass beakers and sonicated for approximately 10 minutes. The beakers were rinsed with a portion of the 15 L dilution water into 500 mL flasks and sonicated for approximately 90 minutes. The flasks were then rinsed into the appropriate test chamber using a portion of the pre-measured 15 L of dilution water. Each solution was stirred using a top-down electric mixer overnight. All test solutions were adjusted to 100% active ingredient during preparation, based on the test substance purity of 98%. Samples were

collected from each test chamber of each treatment and control group at the beginning of the test and at 48 and 96 hours (±1 hour) of the test to measure concentrations of the test substance. Due to 100% mortality in the 9.0 mg a.i./L treatment group, analytical sampling in this treatment was discontinued after 48 hours. Test solutions appeared clear and colorless during the test, with no evidence of precipitation observed. Measured concentrations of the samples ranged from approximately 94 to 113% of nominal. Over the course of testing, temperature ranged from 21.8 – 22.6˚C, pH ranged from 8.5 – 8.7 and dissolved oxygen ranged from 7.8 – 8.6. Dilution water hardness was 148 mg CaCO3/L. The loading rate was 0.07 g fish/L. All fish in the 8.9 mg a.i./L dose group were found dead within 48 hours of test initiation. While no mortalities were observed in the 5.2 mg a.i./L treatment group, fish in this group exhibited signs of toxicity including surfacing, loss of equilibrium, erratic swimming and lethargy. All fathead minnows in the negative control group, and in the 0.90, 1.6 and 2.7 mg a.i./L treatment groups appeared normal throughout the test with no mortalities or signs of toxicity observed. The 96-hour LC50, based on measured concentrations was 6.8 mg a.i./L.
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Water fleas (Daphnia magna) were exposed to the PMN P-13-0024 (98% purity) under static conditions in a 48-hour daphnia immobilization test by [redacted]. The study was reported to follow OECD test guideline 202, OPPTS 850.1010 and ASTM Standard E729-96. Two replicates of 10 D. magna were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.63, 1.3, 2.5, 5.0 and 10 mg a.i./L. Corresponding mean measured concentrations of < 0.400 (LOQ), 0.62, 1.2, 2.4, 4.5 and 8.0 mg a.i./L were determined via HPLC-UV analysis with a limit of quantitation (LOQ) of 0.400 mg a.i./L). Two primary stock solutions were prepared. A 10 mg a.i./L nominal concentration stock, the highest concentration stock, was prepared by mixing a calculated amount of test substance in 1 L of dilution water. The test substance was weighed into a tared beaker and sonicated approximately five minutes three times to facilitate transfer to a 1 L volumetric flask. The stock solution was sonicated for a total of approximately 50 minutes and then mixed by inversion. A second primary stock solution was prepared by mixing a calculated amount of test substance in 2 L of dilution water at a nominal concentration of 5.0 mg a.i./L in the same manner. The stock solution was sonicated for a total of approximately 35 minutes and then mixed by inversion. The primary stock solutions were adjusted to 100% active ingredient during preparation, based on the test substance purity (98 area %). Aliquots of the 5.0 mg a.i./L primary stock solution were proportionally diluted with dilution water to prepare test solutions at the remaining nominal concentrations. The solutions were mixed by inversion and approximately 250 mL of solution was placed in each of two replicate test chambers per treatment group. Mean measured concentrations ranged from 76.5 – 100% of nominal values. Over the course of testing, temperature ranged from 19.9 – 20.7ºC, pH ranged from 8.2 – 8.6 and the dissolved oxygen concentration ranged from 8.0 – 9.0 mg/L. Dilution water hardness was 138 mg CaCO3/L and total organic carbon (TOC) was < 1 mg C/L. A loading rate of 50 daphnids/L was calculated. All daphnids in the control and 0.62, 1.2, and 2.4 mg a.i./L treatment groups appeared normal throughout the test. Percent immobilization at 48-hours was 0%, 0%, 0%, 0%, 75% and 100% at measured concentrations of 0 (control), 0.62, 1.2, 2.4, 4.5 and 8.0 mg a.i./L, respectively. Surviving daphnids in the 4.5 mg a.i./L treatment group exhibited lethargy at test termination. The mean measured 48-hour EC50 is 3.8 mg a.i./L.

48-hour EC50 = 3.8 mg/L

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Water fleas (Daphnia magna) were exposed to PMN P-13-0024 (98% purity) under static-renewal conditions with renewal every 2 to 3 days in a 21-day reproduction toxicity test by [redacted] The study was reported to follow OECD test guideline 211, OPPTS 850.1300 and ASTM E 1193-97. Following a range-finding study, D. magna were exposed to the PMN substance at nominal concentrations of 0 (dilution water control), 0.077, 0.19, 0.48, 1.2 and 3 mg a.i./L. Corresponding mean measured concentrations of < 0.0500 (LOQ), 0.066, 0.16, 0.40, 0.90 and 2.5 mg a.i./L were determined using HPLC analysis with a limit of quantitation (LOQ) of 0.0500 mg a.i./L. Ten replicate test chambers containing one daphnid each were tested for each treatment group and 20 replicate test chambers were tested for the control group. Test solutions were prepared every 2 to 3 days during the test. All test solutions were adjusted to 100% active ingredient during preparation, based on 99% purity of the PMN substance. A primary stock solution was prepared in dilution water at a nominal concentration of 3.0 mg a.i./L, equivalent to the highest concentration tested. The stock solution was mixed by sonication for approximately 40 to 50 minutes, followed by inversion, and appeared clear and colorless. Proportional dilutions of the primary stock solution were made in dilution water to prepare test solutions at nominal concentrations of 0.077, 0.19, 0.48 and 1.2 mg a.i./L. The test solutions were mixed by inversion, and 200 mL aliquots were added to each test chamber. All test solution appeared clear and colorless after mixing. Test chambers were loosely covered with plastic petri dishes. Test solutions appeared clear and green due to algal feed during the test, with no evidence of precipitation observed. Mean measured test concentrations were 75 – 86% of nominal. Over the course of the study, water temperature ranged from 19.0 – 20.9˚C, pH ranged from 8.1 – 8.7 and dissolved oxygen ranged from 7.0 – 9.1 mg/L. Dilution water hardness and TOC was 140 – 144 mg CaCO3/L and < 1 mg C/L, respectively. A loading rate of 5 daphnids/L was calculated. Survival in the 0.066, 0.16, 0.40, 0.90 and 2.5 mg a.i./L treatment groups at test termination was 70, 80, 60, 80 and 80%, respectively. All surviving first-generation daphnids in the 2.5 mg a.i./L treatment group were small in stature compared to the control organisms from Day 12 to test end and they also appeared pale in coloration from Day 16 through Day 21 of the test. At test termination, surviving daphnids in the 0.066, 0.16, 0.40 and 0.90 mg a.i./L treatment groups were normal in appearance. Daphnids exposed to concentrations ≥ 2.5 mg a.i./L had statistically significant reductions in reproduction, length and weight in comparison to the negative control. The 21-day EC50 values, based on mean measured concentrations, are > 2.5 and 1.6 mg a.i./L for immobilization and reproduction, respectively. The 21-day NOEC and LOEC, based on mean measured concentrations, are 0.90 and 2.5 mg a.i./L, respectively, which results in a ChV (geometric mean of the NOEC and LOEC) of 1.5 mg/L.
21-day EC50 (immobilization) > 2.5 mg a.i./L
21-day EC50 (reproduction) = 1.6 mg a.i./mg/L
21-day NOEC = 0.90 mg a.i./L
21-day LOEC = 2.5 mg a.i./L
ChV = 1.5 mg a.i./L

Conclusion
All three tests are considered acceptable. Due to the lack of an algal toxicity test, the ECOSAR

(v.1.10) predictions will be used to assess toxicity to algae. The SAR chemical category esters predict algae to be the most sensitive species with a 96-hour EC50 for algae of 0.76 mg/L. The SAR chemical category esters predict fish to be the most sensitive species for chronic toxicity with a value for fish of 0.074 mg/L. The acute concern concentration (CC) is determined by diving 0.76 mg/L by an assessment factor of 4 to yield 190 µg/L or 190 ppb. The chronic CC is determined by dividing 0.074 mg/L by an assessment factor of 10 to yield 7.4 µg/L or 7.4 ppb.

Chronic CC = 7.4 ppb Acute CC = 190 ppb
Reviewer: L. Newsome

Factors	Values	Comments
Assessment Factor	10	
Concentration of Concern (ppb)	7	
SARs	esters	
SAR Class	ester	
Ecotox Category	Esters	

Ecotox Factors Comments:

SAT Chair: Becky Jones

STANDARD REVIEW ENGINEERING REPORT [redacted]

P-13-0024
Standard Review Draft 11/29/2012

ENGINEER: El-Zoobi \ DDH \ JAS
PV (kg/yr): [redacted]

Revision Notes/Assessment Overview: ==>Standard Review (11/28/12): For the MFG operation: this standard review includes additional basis from the submission to support calculated release estimates. For the USE operation: release and exposure activities were referenced against [redacted] - updated number of workers based on [redacted].

SUBMITTER: ICL-IP America, Inc. (submitter)

USE: Additive flame retardant for flexible polyurethane foams. The PMN substance is phosphate ester based halogen-free flame retardant. The PMN material is intended to be [redacted] P2REC CRSS: forward. P2 Claim: The PMN substance would be a drop-in replacement/alternative for TDCP, a halogen based flame retardant used in polyurethane foams. Analog [redacted] is a flame retardant for [redacted]. File [redacted]

OTHER USES: [redacted]

MSDS: Yes **LABEL**: No

Gen Eqpt: neoprene gloves / chemical safety goggles / use protective clothing impervious to this material / adequate ventilation is recommended
Respirator: in case of insufficient ventilation wear suitable respiratory equipment
Health Effects: may cause mild irritation to the eyes
TLV/PEL: - none established

CRSS: (10/21/2012 11:00:00 PM):
Chemical Name: [redacted]
S-H2O: 0.078 g/L @
VP: 7.0E-6 torr @
MW: [redacted]
Physical State and Misc CRSS Info:
Neat: [redacted] **Mfg:** [redacted]
Proc/Form: [redacted], [redacted] PMN material in polyurethane foam formulation **End Use:** [redacted], PMN material entrained in flexible polyurethane foam. The PMN material is the [redacted]. Submitted data: [redacted]; MP = 25-35 °C (est.); WS = 78 mg/L(OECD 105); log P = 3.16 (OECD 117); submitted TGA shows loss of mass (decomposition) > 162 °C; submitted IR, 1H NMR, and 31P NMR are in agreement with the structure provided. EPI estimated data (input WS = 78 mg/L, log P = 3.16): BP = 381 °C; VP = 6.72E-6 torr; WS = 0.025 g/L; log P = 4.38. ACD Labs estimated data (STN pprop): BP = 345.7 °C; VP = 1.21E-4 torr; WS = 0.18 g/L; log P = 4.0. [redacted]

Consumer Use: [redacted]

SAT (concerns): (10/22/2012 11:00:00 PM):

Migration to groundwater: Moderate

PBT rating: P1 **B**1 **T**2 .
Health: 1-2, Dermal, Drinking Water, Inhalation, XB Testing (Testing desired)
Eco: 3, Water (All releases to water with a CC = 71 ppb), XB Testing (Testing desired)

OCCUPATIONAL EXPOSURE RATING: 1B

NOTES & KEY ASSUMPTIONS:
Generated by the 06/07/2005 version of ChemSTEER. This IRER is for a PMN is used as a flame retardant for polyurethane foam, with a PV of [redacted] kg/yr. Both MFG and USE were assessed. The SAT report lists dermal/inhalation exposures; and releases to water with a concentration of 7 ppb as concerns. Migration to groundwater is moderate. This is an exposure-based case for health and eco. No CEB exposure-based criteria were met. This IRER assesses inhalation and dermal exposures; and releases to water, land and incineration. Inhalation exposures and releases to air are not expected because VP is negligible and the PMN is not used in any way that would become an mist. NOTE: the submission states the PMN is a [redacted], but has a MP of 25-35 deg C and classified as [redacted], therefore, the assessments were made as if the PMN were always a [redacted]. // Past case [redacted]) were referenced for consistency. // [redacted] were import only; therefore, domestic mfg not assessed. Past case [redacted] assessed both dermal exposure [redacted]. This IRER does not assess inhalation exposures, as consistent with past case [redacted]). // All past cases assessed releases during use to uncertain where the submission did not provide information (consistent with this IRER). [redacted] asseses inhalation exposures to particulates and dermal exposures [redacted]). [redacted] did not assess inhalation exposures as [redacted] (consistent with this IRER). [redacted] did assess dermal exposures to [redacted] (consistent with this IRER).

POLLUTION PREVENTION CONSIDERATIONS:
P2 Claim: The PMN substance is a halogen-free, low-vapor-pressure flame retardant mainly used in PU foam application. The PMN substance would be a drop-in replacement/alternative for TDCP, a halogen based flame retardant. The PMN substance is an efficient FR where less chemical is used in total. In addition to acute toxicity studies, we have also performed chronic daphnia and 28-day sub-acute toxicity studiy. The No Observed Effect Concentration (NOEC) in Daphnia magna after exposure of 21 day is 0.90 mg a.i./L. The 28-day NOAEL is 300 mg/kg/day (4 weeks oral rat). When we compare this NOAEL value to the actual exposure levels expected either from the plant waste water or the product's use, it can be seen that it is far above those levels (please refer to the attached wastewater treatability study, reference number # 030 the SBRT report) where the concentration of E08-16T in the plant's effluent is below 0.2 mg/L (LOD). It can be concluded that the plant's effluent is not a concern to the environment. P2REC CRSS: forward.

P2 REC:

EXPOSURE-BASED REVIEW:[redacted] criteria met)

1) # of workers exposed:[redacted] >1000? [redacted]
2) >100 workers with > 10 mg/day inhalation exposure: [redacted]
3) (a) >100 workers w/1-10 mg/day inh. exp. & >100 days/yr: [redacted]
(b) Routine Dermal Cont: > 250 workers & > 100 days/yr: [redacted]

P-13-0024

Use: Polyurethane Foam

Number of Sites/Location: [redacted]

Basis: Submission estimates use at [redacted] sites, [redacted] d/yr.

Process Description: [redacted]

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill

High End: [redacted] kg/site-day over [redacted] day/yr from [redacted] sites or [redacted] kg/yr

to: Uncertain

from: [redacted]

Water or Incineration or Landfill

Conservative: [redacted] kg/site-day over [redacted] day/yr from [redacted] sites or [redacted] kg/yr

to: Uncertain

from: [redacted]

RELEASE TOTAL

[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY

Tot. # of workers exposed via assessed routes: [redacted]

Basis: [redacted]

Dermal:

Exposure to [redacted]
High End: [redacted] mg/day over [redacted] days/yr
Number of workers (all sites) with Dermal exposure: [redacted]
Basis: [redacted].

P-13-0024

Manufacturing

Number of Sites/Location: [redacted] submitter [redacted]

Process Description: [redacted]

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water
Output 2: [redacted] kg/site-day over [redacted] day/yr from [redacted] sites or [redacted] kg/yr
to: [redacted]
from: [redacted]
basis: Submission estimates [redacted] kg/day to plant WWTP that subsequently releases is [redacted] kg/day (~[redacted] removal).The submission provides test results in Attachment 31 from wastewater effluent testing that indicate that no PMN was detected in the wastewater. The submission conservatively estimated a release of [redacted] kg/day based on the testing limit of detection of 50 ppb.

Incineration
Output 2: [redacted] kg/site-day over [redacted] day/yr from [redacted] sites or [redacted] kg/yr
to: [redacted]
from: [redacted]
basis: [redacted]. Submission states [redacted] kg/day [redacted]

Water
Conservative: [redacted] kg/site-day over [redacted] day/yr from [redacted] sites or [redacted] kg/yr
to: [redacted]
from: [redacted]. Submission does not provide an estimate for equipment cleaning. Howeve, the submission states [redacted]. CEB assumes same treatment efficiency as submitter states for other releases to plant WWTW (calculated to be [redacted]% eff). Using CEB [redacted] and the WWT efficiency, the release from WWT is = [redacted]

RELEASE TOTAL

[redacted] kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY

Tot. # of workers exposed via assessed routes: [redacted]
Basis: Submission estimates [redacted] workers potentially exposed. CEB assumes minimum default of [redacted] workers per site.

Dermal:

Exposure to [redacted]
High End: 1.8E+3 mg/day over [redacted] days/yr
Number of workers (all sites) with Dermal exposure: [redacted]
Basis: [redacted].

INITIAL REVIEW EXPOSURE REPORT (IRExR)

Chemical ID: P-13-0024 **Reviewer: Tobias/SS**

Results Table: Dose, Concentration, and Days Exceeded Results Summary

Exposure Scenario[1]			Water				Landfill	Stack Air		Fugitive Air	
Drinking Water			Fish Ingestion								
ADR		LADD	ADR	LADD	7Q10[4] CC = 7	PDM Days Exceeded	LADD	ADR	LADD	ADR	LADD
Release activity(ies)[2]; exposure calculation(s)[3]	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	µg/l	# Days	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day
MFG: Max ADR: max acute eco	**6.41E-06**	---	**3.19E-07**	---	**1.00E-01**	---	---	---	---	---	---
MFG: PDM1	---	---	---	---	**1.48E-03**	**0**	---	---	---	---	---
MFG: Max LADD	---	**3.51E-09**	---	**1.27E-10**	---	---	---	---	---	---	---
USE: Max ADR: max acute eco	**9.40E-01**	---	**5.75E-02**	---	**1.93E+04**	---	---	---	---	---	---
USE: PDM1	---	---	---	---	**1.93E+04**	**200**	---	---	---	---	---
USE: Max LADD	---	**1.62E-02**	---	**5.86E-04**	---	---	**1.86E-02**	---	---	---	---

[1] Exposure scenario titles consist of release activity followed by exposure calculation abbreviation.

[2] Release activities are from engineering report's Manufacturing (Mfg), Processing (Proc) and Use release activity labels. Multiple release activities are combined in one exposure scenario if their releases occur at same location.

[3] Exposure calculations are Acute Dose Rate (ADR), Lifetime Average Daily Dose (LADD), and Probabilistic Dilution Model (PDM). There may be one, two, or all three exposure calculations per exposure scenario. CC is the aquatic concentration of concern.

[4] This column displays concentration values for the 7Q10 streamflow, which is defined as the average daily streamflow of the seven consecutive days of lowest flow within a ten year period.

Remarks:

Results Table: Exposure Based (XB)/Persistent (P2B2) Criteria

Parameter	Exp Based	Persistent	Exceedance Value
Drinking (Surface) Water Dose (mg/kg/day)	Yes	NA	**1.62E-02**
Fish Ingestion Dose (mg/kg/day)	No	NA	
Inhalation Dose (mg/kg/day)	No	NA	
Groundwater Dose (mg/kg/day)	Yes	NA	**1.86E-02**
Surface Water Release After Treatment (kg/yr)	Yes	NA	**1.50E+05**
Total Release After Treatment (kg/yr)	Yes	NA	**2.00E+05**
Consumer Use?			

Fate test recommendations?: (default is NA)

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:1 Number of Release Sites: [redacted]

Release Activity: MFG: Max ADR

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)

		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SITE-SPECIFIC HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO NUMBER:1 RELEASE ACTIVITY: [redacted]: Max ADR

FACILITY NAME: [redacted]

[redacted]

RECEIVING WATER NAME: [redacted]

REACH NUMBER: [redacted] FACILITY ON REACH: [redacted] DISCHARGE TYPE: [redacted]

NPDES PERMIT #: [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER					
FLOW DESCRIPTOR	Harmonic Mean	30Q5	7Q10	1Q10	PLANT
FLOW (MLD)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
CONCENTRATION (µg/L)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

DRINKING WATER INGESTION AND FISH INGESTION EXPOSURE ESTIMATES				
Exposure Units	Drinking Water Results	Drinking Water Units	Fish Ingestion Results	Fish Ingestion Units
Cancer				
$LADD_{pot}$	1.79E-09	mg/kg/day	6.50E-11	mg/kg/day
$LADC_{pot}$	9.20E-08	mg/L	7.78E-07	mg/kg
Acute				
ADR_{pot}	6.41E-06	mg/kg/day	3.19E-07	mg/kg/day

Surface Water Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:2 Number of Release Sites:

Release Activity: :

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:				
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:				
Per Site Release:				
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SITE-SPECIFIC HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO NUMBER:2 RELEASE ACTIVITY: [redacted]

FACILITY NAME: [redacted]

FACILITY LOCATION: [redacted]

RECEIVING WATER NAME: [redacted]

REACH NUMBER: [redacted] FACILITY ON REACH: [redacted] DISCHARGE TYPE: [redacted]

NPDES PERMIT #: [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER					
FLOW DESCRIPTOR	Harmonic Mean	30Q5	7Q10	1Q10	PLANT
FLOW (MLD)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
CONCENTRATION (µg/L)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

DRINKING WATER INGESTION AND FISH INGESTION EXPOSURE ESTIMATES				
Exposure Units	Drinking Water Results	Drinking Water Units	Fish Ingestion Results	Fish Ingestion Units
Cancer				
$LADD_{pot}$	1.74E-09	mg/kg/day	6.30E-11	mg/kg/day
$LADC_{pot}$	8.92E-08	mg/L	7.54E-07	mg/kg
Acute				
ADR_{pot}	9.30E-08	mg/kg/day	4.63E-09	mg/kg/day

Surface Water Comments:

INITIAL REVIEW EXPOSURE REPORT
Chemical ID: P-13-0024

SITE-SPECIFIC HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO NUMBER: 2 RELEASE ACTIVITY: [redacted]

FACILITY NAME: [redacted]

FACILITY LOCATION: [redacted]

RECEIVING STREAM NAME: [redacted]

REACH NUMBER: [redacted] FACILITY ON REACH: [redacted] DISCHARGE TYPE: [redacted]

NPDES PERMIT NUMBER: [redacted] GAGING STATION ID: [redacted]

GAGING STATION PERIOD OF RECORD: [redacted] GAGING STATION NUMBER OF OBSERVATIONS: [redacted] NUMBER OF STATIONS ON REACH: [redacted]

MEAN FLOW (MLD): [redacted] 7q10 FLOW (MLD): [redacted] EFFLUENT FLOW (MLD): [redacted]

RESULTS					
COC (µg/L)	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release days/year	Pre-treatment Loading (kg/site/day)	Waste Water Treatment (%)
7.00	0	0	[redacted]	[redacted]	[redacted]

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:3 Number of Release Sites: [redacted]

Release Activity: [redacted]: Max LADD

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SITE-SPECIFIC HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO NUMBER:3 RELEASE ACTIVITY: [redacted]: Max LADD

FACILITY NAME: [redacted]

FACILITY LOCATION: [redacted]

RECEIVING WATER NAME: [redacted]

REACH NUMBER: [redacted] FACILITY ON REACH: [redacted] DISCHARGE TYPE: [redacted]

NPDES PERMIT #: [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER					
FLOW DESCRIPTOR	Harmonic Mean	30Q5	7Q10	1Q10	PLANT
FLOW (MLD)	[redacted]	[redacted]	[redacted]	[redacted]	NA
CONCENTRATION (µg/L)	N/A	N/A	N/A	N/A	NA

DRINKING WATER INGESTION AND FISH INGESTION EXPOSURE ESTIMATES				
Exposure Units	Drinking Water Results	Drinking Water Units	Fish Ingestion Results	Fish Ingestion Units
Cancer				
$LADD_{pot}$	3.51E-09	mg/kg/day	1.27E-10	mg/kg/day
$LADC_{pot}$	1.80E-07	mg/L	1.52E-06	mg/kg
Acute				
ADR_{pot}	N/A	mg/kg/day	N/A	mg/kg/day

Surface Water Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:4 Number of Release Sites: [redacted]

Release Activity: [redacted]: Max ADR

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES		
SCENARIO #: 4	Number of Sites: [redacted]	RELEASE ACTIVITY:USE: Max ADR
SIC-CODE DESCRIPTION: [redacted]		
SIC-CODE (S): [redacted]		EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.23E-03	1.62E-02	mg/kg/day	8.06E-05	5.86E-04	mg/kg/day
$LADC_{pot}$	0.11	0.83	mg/L	0.96	7.02	mg/kg
Acute						
ADR_{pot}	0.10	0.94	mg/kg/day	7.91E-03	5.75E-02	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:5 Number of Release Sites: [redacted]

Release Activity: [redacted]

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 5 Number of Sites: [redacted] RELEASE ACTIVITY: [redacted]

SIC-CODE DESCRIPTION: [redacted]

SIC-CODE (S): [redacted] EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
25.00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]04		

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.23E-03	1.62E-02	mg/kg/day	8.06E-05	5.86E-04	mg/kg/day
$LADC_{pot}$	0.11	0.83	mg/L	0.96	7.02	mg/kg
Acute						
ADR_{pot}	0.10	0.94	mg/kg/day	7.91E-03	5.75E-02	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SIC CODE EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 5 RELEASE ACTIVITY: [redacted]

SIC CODE DESCRIPTION: [redacted]

ASSOCIATED SIC CODES: [redacted]

SIC CODE RESULTS						
COC (µg/L)	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release days/year	Loading (kg/site/day)	Waste Water Treatment (%)	High/Avg Analysis
7.00	55	200	[redacted]	[redacted]	[redacted]	High

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024 Assessor: Tobias/SS

ENVIRONMENTAL RELEASES

Scenario#:6 Number of Release Sites: [redacted]

Release Activity: [redacted]: Max LADD

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	[redacted]	[redacted]	[redacted]	[redacted]
Per Site Release:	[redacted]	[redacted]	[redacted]	[redacted]
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES		
SCENARIO #: 6	Number of Sites: [redacted]	RELEASE ACTIVITY: [redacted]: Max LADD
SIC-CODE DESCRIPTION: [redacted]		
SIC-CODE (S): [redacted]		EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
25.00	[redacted].	[redacted]	[redacted]	[redacted]	[redacted]

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.23E-03	1.62E-02	mg/kg/day	8.06E-05	5.86E-04	mg/kg/day
$LADC_{pot}$	0.11	0.83	mg/L	0.96	7.02	mg/kg
Acute						
ADR_{pot}	N/A	N/A	mg/kg/day	N/A	N/A	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-13-0024

DRINKING WATER EXPOSURE ESTIMATES FROM LANDFILL RELEASES

SCENARIO #: 6 ACTIVITY: [redacted]: Max LADD

RELEASE DESCRIPTION:

EXPOSED POPULATION: Adult

NUMBER OF SITES	NON-SLUDGE LANDFILL RELEASE AND DAYS OF RELEASE (kg/site/day)/(days)	LANDFILLED SLUDGE[1] AND DAYS OF RELEASE (kg/site/day)/(days)	MIGRATION DESCRIPTOR[2]	ADSORPTION TO WASTEWATER SLUDGE (%)	DRINKING WATER TREATMENT (%)
[redacted]	[redacted]	[redacted]	Moderate	0.00	0.00

[1] Landfilled sludge equals the fraction adsorbed to wastewater treatment sludge times the surface water pre-treatment release.

[2]

Migration Descriptor	Log Koc	Groundwater Concentration (GWC) (mg/L per kg release)
Negligible	no migration	None
Negligible to slow	> 4.5	3.21E-6
Slow	<4.5 to 3.5	2.67E-5
Moderate	<3.5 to 2.5	5.95E-5
Rapid	<2.5	7.55E-5

Exposure Units	Results	ASSUMPTIONS			
		ED (years)	AT (years)	BW (kg)	IR (L/day)
Cancer					
$LADD_{pot}$ (mg/kg/day)	1.86E-02	30.00	75.00	71.80	1.40
$LADC_{pot}$ (mg/L)	0.95	30.00	75.00	NA	NA

REMARKS: